# Soil Sensors

## Optimum Soil Management

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N-Sense soil sensors are a critical component of our precision soil fertility and soil health management systems. The sensors provide in-situ measurements of specific soil properties; data needed to diagnose soil problems and generate prescriptions for remediation.

## Soil Nitrate Sensor

The N-Mapper is a soil nitrate sensor for plant available Nitrogen. Obtaining quick measurements at critical growth stages is necessary to optimize nitrogen fertilizer rates and reduce risks. **Working together the N-Mapper and N-Sense Field Management Software provide farmers with high-resolution variable rate nitrogen prescriptions that increase yields and decrease loss of fertilizer to leaching.** This sensor is currently in active field trials.

## Soil Quality Sensor

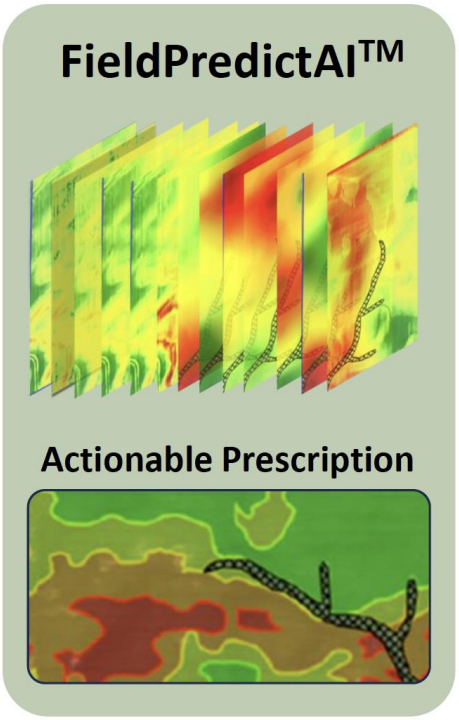
The SoilQualityMapper measures soil properties, (SOM, CEC, EC, pH, & WC) needed to assess soil health. This sensor is specifically optimized for creating biochar prescriptions to help mitigate soil health problems while sequester carbon. **The biochar industry is expected to grow rapidly over the next decade as efforts to remove carbon from the atmosphere scale up**. This sensor is currently in active development.

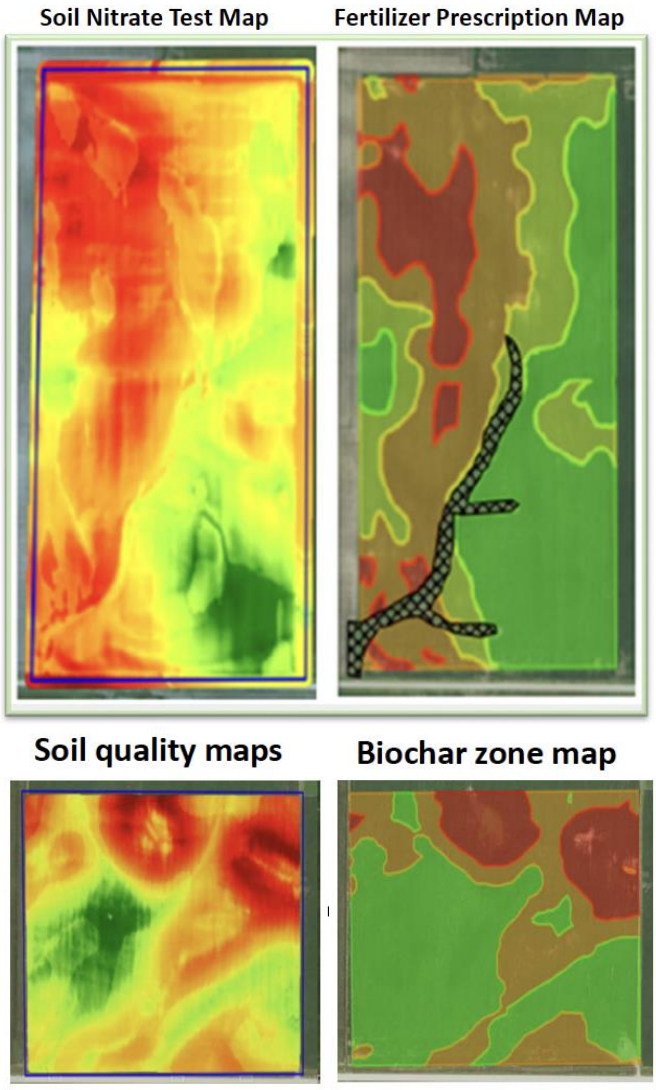
## Crop Health Sensor

The CropScout is a machine vision system finely tuned for early growth-stage plant health assessment. The sensor utilizes a custom AI model to evaluate the plant and ground as the sensor platform moves through the field. Insights provided include plant nutrient deficiencies, early disease warning, insect damage, stand count, surface residue cover, weed population, etc. **CropScout is an early warning system to place a second set of eyes on the field to aid in total farm health.**

## Ai-Optimized Farmar-Friendly Software

N-Sense's proprietary algorithms convert measured soil property data (from our sensors or a soil testing lab) into actionable prescriptions. The algorithms build unique geo-spatial models for each soil property leveraging LiDAR, soil survey, remote sensing, weather, and crop history data. The product is a data stack with extreme geo-spatial fidelity that can be used to write high-resolution prescriptions for fertilizer or other soil amendments. These prescriptions are directly compatible with industry standard manufacturer API's for direct interface to variable rate applicators.




## Precision

The examples to the left show soil property maps and zone-maps derived from them for a precision sidedress nitrogen fertilizer application (upper) and a precision biochar application (lower). The software provides high-resolution understanding of soil conditions and then distills that understanding into equipment acceptable zones for variable rate applications of soil amendments.

## The 4Rs

In modern day technology driven farming our software allows a farmer to be both fiscally and environmentally conscious. The key to success is applying the **R**ight amount of the **R**ight product in the **R**ight place at the **R**ight time.